JS 1/19/22
RJA 2/16/22

INITIAL REVIEW ENGINEERING REPORT [redacted]
PMN: 18-0030

Focus Ready Draft 11/9/2017
ENGINEER: Al-Haddad \ JAS
PV (kg/yr): 12,000 Import Only

SUBMITTER: Miwon North America, Inc.

USE: Acrylate resin for UV-curable industrial coatings. No references found. [redacted].

OTHER USES: [redacted]

MSDS: Yes Label: No

Gen Eqpt: Utilize a closed system process where feasible; wear eye/face protection such as a chemical splash proof goggles or face shield, wear impermeable gloves and suitable protective clothing.

Respirator: Avoid breathing processing vapor or mist. Where airborne exposure is likely or airborne exposure limits are exceeded (if applicable, see above), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components (full facepiece recommended). Consult respirator manufacturer to determine appropriate type equipment for a given application. For spray applications, a NIOSH certified respirator with an APF of 1000 is required. For all other means of application, a NIOSH certified respirator with an APF of 50 is required.Observe respirator use limitations specified by NIOSH or the manufacturer.

Health Effects: Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation

TLV/PEL:
none established

CRSS :
Chemical Name: [redacted]

S-H20: 1E-06 g/L @
VP: 1.0E-6 torr @
MW: [redacted]
Physical State and Misc CRSS Info:
Neat: Liquid Mfg: NK: Imported Proc/Form: Solution: PMN substance in coating formulation End Use: Destroyed. [redacted] Estimated Data: BP > 500°C (High MW); VP < 0.000001 torr (High MW); WS < 0.000001 g/L (structure). [redacted] Cont'd on p.6.

Consumer Use: No
SAT (concerns) (10/31/2017):
Related Cases and Misc SAT Info:
[redacted]
Migration to groundwater: Negligible
PBT rating: P3B1T2
Health: 1-2 Dermal, Drinking Water, Inhalation
Eco: 1 No releases to water

OCCUPATIONAL EXPOSURE RATING: [redacted]

NOTES & KEY ASSUMPTIONS:

Occupational exposure and environmental releases were estimated using the 9/30/2013 version of ChemSTEER tool. Input to ChemSTEER tool includes information from: the PMN submission, physical / chemical properties, relevant past cases, and the 2010 ESD on the Formulation of Radiation Curable Coatings, Inks, and Adhesives and the 2010 ESD on the Application of Radiation Curable Coatings, Inks, and Adhesives. // PMN is import only, therefore manufacturing is not assessed. The PMN is used as a UV-curable industrial coating. to assess formulation and downstream use. This PMN was previously submitted as [redacted] This IRER used the same assumptions as the previous case, [redacted] This IRER also updates the number of PROC and USE sites [redacted] // Past same submitter, similar use cases referenced for consistency include [redacted] All past cases referenced the UV-curable coating GS (formulation & application) to assess releases for each PROC and USE activity, to determine the UV curable coating use rate, and to assess exposures from spray coatings (consistent with this IRER). All past cases assumed the number of coating sites is equal to the number of PROC sites (consistent with this IRER).

POLLUTION PREVENTION CONSIDERATIONS:

None.

EXPOSURE-BASED REVIEW: No

INITIAL REVIEW ENGINEERING REPORT [redacted]

PMN: 18-0030

Processing: Resin Formulation

Number of Sites/ Location: 5

5-10 [redacted]

Days/yr: 10

Basis: Submission estimates 5-10 blending sites, where the LVE is blended from 100%. Current submission did not state final concentration, but previously submitted chemical [redacted] indicated formulation to 30%. Submission also estimates 10 exposure days, and 400-2,000 kg/batch. RAD assumes 5 sites and 10 days/yr to maximize daily throughputs. CS calculates 240 kg LVE/batch.

Process Description: LVE imported (liquid, 100%) --> Charge to vessel --> Heating (40-50C, no chemical conversion) --> Mixing --> Packed in 5-55 gal drums (30% liquid) (per submission)

ENVIRONMENTAL RELEASES ESTIMATE SUMMARY

IRER Note: The daily releases listed for any source below may coincide with daily releases from the other sources to the same medium.

Water or Incineration or Landfill
High End: 7.2E+0 kg/site-day over 10 days/yr from 5 sites
or 7.2E+1 kg/site-yr from 5 sites or 3.6E+2 kg/yr-all sites
to: water, incineration, or landfill (per GS)
from: Cleaning Liquid Residuals from Drums Used to Transport the Raw Material
basis: EPA/OPPT Drum Residual Model, CEB standard 3% residual. Submission states zero release to environment| but does not describe any particular emissions control methods. RAD assesses 3% residual to water, incin, or land, per the ESD on Formulation of Radiation Curable Coatings. Note SAT concern for water releases. Migration to groundwater is negl.

Incineration or Landfill
Conservative: 2.4E+0 kg/site-day over 10 days/yr from 5 sites
or 2.4E+1 kg/site-yr from 5 sites or 1.2E+2 kg/yr-all sites
to: incineration or landfill (per GS)
from: Equipment Cleaning Losses of Liquids from a Single, Large Vessel

basis: EPA/OPPT Single Vessel Residual Model, CEB standard 1% residual. Submission states zero release to environment but does not describe any particular emissions control methods. RAD assesses 1% residual to incin or land, per the ESD on Formulation of Radiation Curable Coatings. Note that migration to groundwater is negl.

Incineration or Landfill
Output 2: 2.4E+0 kg/site-day over 10 days/yr from 5 sites
or 2.4E+1 kg/site-yr from 5 sites or 1.2E+2 kg/yr-all sites
to: incineration or landfill (per GS)
from: Filter Media Changeout
basis: User-Defined Loss Rate Model. Per the 2010 ESD on Formulation of Radiation Curable Coatings, assume 1% loss from filter waste (unpigmented coatings) to incin or land. Note that migration to groundwater is negl.

RELEASE TOTAL
6.0E+2 kg/yr - all sites

OCCUPATIONAL EXPOSURES ESTIMATE SUMMARY
Tot. # of workers exposed via assessed routes: 195
Basis:

Inhalation:

negligible (VP < 0.001 torr)

Dermal:

Exposure to Liquid at 100.00% concentration
High End:
> Potential Dose Rate: 1.8E+3 mg/day over 10 days/yr
> Lifetime Average Daily Dose: 3.9E-1 mg/day over 10 days/yr
> Average Daily Dose: 6.9E-1 mg/day over 10 days/yr
> Acute Potential Dose: 2.5E+1 mg/day over 10 days/yr
Number of workers (all sites) with dermal exposure: 195
Basis: Unloading Liquid Raw Material from Drums; EPA/OPPT 2-Hand Dermal Contact with Liquids Model.

INITIAL REVIEW ENGINEERING REPORT [redacted]

PMN: 18-0030

Use: Industrial Coating

Number of Sites/ Location: 5

unknown site(s)

Days/yr: 250

Basis: The submission does not provide details about the use operation. The LVE arrives at 30% concentration. The 2010 GS on Application of Radiation Curable| Coatings estimates a use rate of 137,000 kg/site-yr (for unknown coatings). Per the GS, the number of sites = (PV) / (Coating use rate x Concentration of LVE in coating) = 12,000 / (137,000 x 0.30) = 0.29 sites = ~1 site. As a conservative estimate, CEB assumes the number of use sites is equal to the number of PROC sites (5 sites). The GS estimates 250 operating days as default. CS calculates 10 kg LVE/batch.

Process Description: Coating is unloaded (liquid, 30%) --> Coating is diluted and mixed (optional) --> Coating is applied to substrate (roll, spray, curtain) --> Coating is cured, LVE is destroyed (per GS and CRSS)

ENVIRONMENTAL RELEASES ESTIMATE SUMMARY

IRER Note: The daily releases listed for any source below may coincide with daily releases from the other sources to the same medium.

Water or Incineration or Landfill
High End: 1.9E+0 kg/site-day over 38 days/yr from 5 sites
or 7.1E+1 kg/site-yr from 5 sites or 3.6E+2 kg/yr-all sites
to: water, incineration, or landfill (per GS)
from: Cleaning Liquid Residuals from Drums Used to Transport the Raw Material
basis: EPA/OPPT Drum Residual Model, CEB standard 3% residual. Submission does not estimate use releases. The GS on Application of Radiation Curable| Coatings, Inks, and Adhesives estimates container residue release to water, incin, or land. Note SAT concern for water releases. Migration to gw is negl.

Air
Output 2: 7.2E-1 kg/site-day over 250 days/yr from 5 sites
or 1.8E+2 kg/site-yr from 5 sites or 9.0E+2 kg/yr-all sites
to: air (10%); landfill (90%) (per GS)
from: Coating Using Hand-Held Spray Gun
basis: EPA/OPPT Automobile Refinish Coating Overspray Loss Model (non-volatiles). For an unknown coating process, the GS on Application of Radiation Curable Coatings, Inks, and Adhesives conservatively assesses the spray coating with a 25% transfer efficiency. The GS assumes 90% of the emissions are captured by a dry filter and the waste is landfilled, while 10% is released to air.

Incineration or Landfill
Conservative: 1.9E-1 kg/site-day over 250 days/yr from 5 sites
or 4.8E+1 kg/site-yr from 5 sites or 2.4E+2 kg/yr-all sites
to: incineration or landfill (per GS)
from: Equipment Cleaning Losses of Liquids from Multiple Vessels
basis: EPA/OPPT Multiple Process Vessel Residual Model, CEB standard 2% residual. The GS on Application of Radiation Curable Coatings, Inks, and Adhesives estimates equipment cleaning residual release to incin or land. Note that migration to gw is negl.

Landfill
Output 2: 6.5E+0 kg/site-day over 250 days/yr from 5 sites
or 1.6E+3 kg/site-yr from 5 sites or 8.1E+3 kg/yr-all sites
to: air (10%); landfill (90%) (per GS)
from: Coating Using Hand-Held Spray Gun
basis: EPA/OPPT Automobile Refinish Coating Overspray Loss Model (non-volatiles). For an unknown coating process, the GS on Application of Radiation Curable Coatings, Inks, and Adhesives conservatively assesses the spray coating with a 25% transfer efficiency. The GS assumes 90% of the emissions are captured by a dry filter and the waste is landfilled, while 10% is released to air.

RELEASE TOTAL
9.6E+3 kg/yr - all sites

OCCUPATIONAL EXPOSURES ESTIMATE SUMMARY
Tot. # of workers exposed via assessed routes: 170
Basis: Based on guidance in the 2010 GS (Application of Radiation Curable Coatings, Inks and Adhesives), CEB assumes 17 workers per site.

Inhalation:

Exposure to Mist (non-volatile) (Class I)
What-If:
> Potential Dose Rate: 2.3E+1 mg/day over 250 days/yr
> Lifetime Average Daily Dose: 1.3E-1 mg/kg-day over 250 days/yr
> Average Daily Dose: 2.3E-1 mg/day over 250 days/yr
> Acute Potential Dose: 3.3E-1 mg/day over 250 days/yr
Number of workers (all sites) with inhalation exposure: 85
Basis: Coating Using Hand-Held Spray Gun; EPA/OPPT Automobile OEM Spray Coating Inhalation Model (non-volatile non-polyisocyanates).

NOTE: The respirator class is: I. Particulate (including solid or liquid droplets).

INHALATION MONITORING DATA REVIEW

1)	Uncertainty (estimate based on model, regulatory limit, or data not specific to industry):	Yes
2)a)	Exposure level > 1 mg/day?	Yes
	OR	
b)	Hazard Rating for health of 2 or greater? 1-2	No

=> Inhalation Monitoring Data Desired? **No**

Dermal:

Exposure to Liquid at 30.00% concentration
High End:
> Potential Dose Rate: 5.3E+2 mg/day over 250 days/yr
> Lifetime Average Daily Dose: 3.0E+0 mg/day over 250 days/yr
> Average Daily Dose: 5.2E+0 mg/day over 250 days/yr
> Acute Potential Dose: 7.6E+0 mg/day over 250 days/yr
Number of workers (all sites) with dermal exposure: 85
Basis: Unloading Liquid Raw Material from Drums; EPA/OPPT 2-Hand Dermal Contact with Liquids Model.

Exposure to Liquid at 30.00% concentration
High End:
> Potential Dose Rate: 2.6E+3 mg/day over 250 days/yr
> Lifetime Average Daily Dose: 1.5E+1 mg/day over 250 days/yr
> Average Daily Dose: 2.5E+1 mg/day over 250 days/yr
> Acute Potential Dose: 3.7E+1 mg/day over 250 days/yr
Number of workers (all sites) with dermal exposure: 85
Basis: Coating Using Hand-Held Spray Gun; EPA/OPPT 2-Hand Dermal Immersion in Liquid Model.

[redacted]